

CHAPTER 6

CAREGIVING GRANDMOTHERS AND DEPRESSIVE SYMPTOMS IN SOUTH KOREA

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ABSTRACT

Purpose: In recent decades, it has been a burgeoning trend in South Korea that older women are more actively engaged in grandparenting (i.e., caring for grandchildren) as they are living longer and healthier lives. The present study examines how grandparenting is associated with the mental health of grandmothers.

Design/methodology/approach: Drawing from the Korean Longitudinal Study of Aging (2008–2012, N = 2,814), we used growth curve models to estimate the trajectories of grandmothers' depressive symptoms by grandparenting type.

Findings: The results show that caregiving grandmothers in multigenerational households experience a decline in depressive symptoms with age, despite having a higher mean level of depressive symptoms than non-caregiving grandmothers at age 47; whereas the non-caregiving grandmothers experience an increase in depressive symptoms with age. Grandmothers who provide non-coresident grandparenting (i.e., babysitting) are not significantly different from non-caregiving grandmothers in the rate of increase in depressive symptoms.

Originality/value: Grandparenting in multigenerational households may have a beneficial effect on older women's mental health over time in South Korea.

This finding is robust after we control for socioeconomic status, health behaviors, and social support.

Keywords: Grandparenting; child care; grandparent; intergenerational relationships; mental health; South Korea

INTRODUCTION

Over the past few decades, researchers have increasingly sought to understand how significantly increased life expectancy affects intergenerational relationships and older adults' roles in aging families. As older adults live longer and stay healthier than they had in the past, grandparenthood, a period when older adults can interact with their grandchildren, has also been extended (Margolis, 2016). An increasing number of grandparents have become engaged in caring for grandchildren (i.e., grandparenting) during later life (Baker, Silverstein, & Putney, 2008; Silverstein & Giarrusso, 2010). Some older adults even provide intensive care for their grandchildren depending on the family's situation, especially their adult children's needs from changing sociodemographic trends, such as single parenthood, women's employment, and increasing work hours (Casper, Florian, Potts, & Brandon, 2016; Cherlin, 2010). These phenomena are found in various sociocultural settings around the world since grandparents, specifically grandmothers, have long played an important role in supporting child care within their families (Baker et al., 2008).

South Korea (hereafter, Korea) is one of the countries that has achieved a rapid increase in life expectancy over the past several decades. Indeed, life expectancy at birth for Korean women is 84.6 years old, which ranked eighth in the world in 2012 (World Health Organization, 2014). As their healthy later life has been extended, Korean older women have been more actively engaged in their role as family caregivers. As in the United States or other western countries, one of the popular caregiving roles of Korean older women is grandparenting. An increasing number of grandmothers have provided an intensive level of daily child care for their grandchildren, even when their grandchildren and adult children do not reside with them (Korea Institute of Child Care and Education, 2015). The unique facet of Korean grandparenting is derived from the situation wherein older women usually take care of grandchildren to support their dual-income adult children. Traditional family culture emphasizing intra-family support and the absence of high-quality daycare centers are the primary reasons why Korean older women are more frequently associated with the grandparenting role.

There have been few studies that investigated the consequences of grandparenting for older women's well-being and health in Korea despite the significant growth of the grandparenting trend (Choi & Zhang, 2018). Little is known about the health consequences of Korean grandparenting, especially for mental health, though the findings from other cultural contexts have reported both positive and negative impacts of grandparenting on older adults' mental health (Hughes, Waite,

LaPierre, & Luo, 2007; Ku et al., 2013; Szinovacz, DeViney, & Atkinson, 1999). In addition, the majority of prior research on Korean grandparenting has focused on grandparents who provide skipped-generation household grandparenting (i.e., care in grandparent-grandchildren only households) and their excessive caregiving demands (Kim, 2009; Lee & Han, 2008; Park, 2010). It is unknown whether other types of grandparenting have significant effects on health. Finally, most prior studies have utilized either cross-sectional regional data (Bae, 2007; Baek, 2009; Choi & Cha, 2013; Kang, 2011) or qualitative data (Kim & Seo, 2007).

The present study aims to examine the association between grandparenting and depressive symptoms in the Korean context. Drawing from the Korean Longitudinal Study of Aging (2008–2012), we examine whether grandparenting influences the trajectories of depressive symptoms over time among older women.

BACKGROUND

Theoretical Perspectives

Grandparenting is one of the new social roles for older adults living longer and healthier later lives. In order to understand how grandparenting may influence older adults' mental health, two competing theoretical perspectives are often used: the role enhancement theory and the role strain theory. *The role enhancement theory* suggests that executing multiple social roles simultaneously contributes to individuals' well-being, which also promotes mental health. Those who have different social roles enjoy a greater sense of fulfillment and satisfaction cumulated from carrying out each role (Moen, Robison, & Dempster-McClain, 1995). In light of this perspective, grandparenting is associated with better mental health. Older adults who provide care for their grandchildren, a new additional role in life, obtain positive health-promoting emotions, including the sense of purpose in life, self-efficacy, and life satisfaction, while interacting with their grandchildren and their parents, the adult children (Pruchno & McKenney, 2002; Rozario, Morrow-Howell, & Hinterlong, 2004; Szinovacz & Davey, 2006). Caregiving grandparents are likely to be more physically active in taking care of grandchildren, which in turn has beneficial effects on mental health (King, Rejeski, & Buchner, 1998).

Grandparenting, on the other hand, can adversely affect older adults' mental health based on *the role strain theory*. Role strain is a broad concept including the hardships, challenges, conflicts, or other problems individuals experience in their social roles (Pearlin, 1983). The theoretical perspective suggests that simultaneously holding various social roles can be detrimental to individuals' well-being due to the strains of multiple role participation (Whitsett & Land, 1992). The more role obligations one has, the more struggling and stress arise because one's resources, such as time, energy, emotions, and property, have limits (Goode, 1960). As such, overburdening tasks lead to stress and more psychological distress (Barnett & Baruch, 1985; Pearlin, 1989). Caregiving grandparents may find increasing strains from managing multiple roles as spouse, parent, grandparent,

friend, or employee. Such role strain can undermine grandparents' mental health by giving rise to secondary stressors, including conflicts over child-rearing with their adult children, less time with their spouse or other family members, and loss time for leisure and participation in social activities (Blustein, Chan, & Guanais, 2004). Both of these two theoretical perspectives give insights on how grandparenting can influence old adults' mental health. That said, the health consequences of grandparenting may depend on whether the strains from grandchild care outweigh the physical and mental benefits of the caregiving experience (Choi, 2020).

Empirical Evidence on Grandparenting and Mental Health

Research on grandparenting has been limited, and the majority of the studies are conducted in the United States and European countries. Given the scarcity of Korean studies on grandparenthood, we first address the previous findings from other countries and then discuss the Korean context. The extant literature on grandparenting has suggested that grandparenting has both positive and negative impacts on mental health in later life. The mixed evidence depends on what types of grandparenting older adults provide for their grandchildren. Researchers have mainly measured grandparenting using either family structure (i.e., in what family circumstance the caregiving is provided) or care intensity (i.e., how many hours are spent on the caregiving) of older adults. As for the beneficial effects of grandparenting on mental health, prior studies have found that providing non-coresident grandparenting (i.e., maintaining a separate household from grandchildren but still babysitting) is associated with grandmothers' lower levels of depressive symptoms. Caregiving grandmothers are also more likely than non-caregiving grandmothers to report fewer depressive symptoms when providing moderately intensive grandparenting (i.e., providing 200–500 hours of care over two years, which is approximately 8–19 hours per week) (Hughes et al., 2007). A moderate level of grandparenting, especially on a regular basis, is linked to a lower risk of depression among grandmothers (Grundy et al., 2012). A moderate level of obligation and interaction with grandchildren and/or adult children via caregiving would thus contribute to the older adults' better mental health as explained by the role enhancement theory.

Other empirical studies, by contrast, suggest that grandparenting is detrimental to mental health in later life. As the role strain theory argues, grandparenting adversely affects mental health, especially when the grandchild care is excessive. An increasing number of older adults live with and take care of grandchildren as custodial caregivers on behalf of their incapable adult children. Adult children in these cases are mostly absent in the household (i.e., skipped-generation households) for various reasons, such as divorce, unemployment, death, and incarceration (Silverstein & Giarrusso, 2010). Previous research has found that an intensive level of grandchild care, such as the skipped-generation household grandparenting, is significantly associated with more depressive symptoms (Blustein et al., 2004; Hughes et al., 2007; Szinovacz et al., 1999). Stress and physical burden from a substantial amount of grandparenting seem to explain the adverse effects of grandparenting on older adults' mental health.

The implications of grandparenting for mental health may also vary by socio-cultural context, given the cultural differences in the meaning of grandparenthood and the social expectations for grandparental roles (Hayslip, Page, Blieszner, & Bedford, 2012). The provision of grandparenting is more common and normative for older adults in Asia. Strong family values and ties within the Asian culture encourage such direct family support across generations (Kataoka-Yahiro, Ceria, & Caulfield, 2004; Yancura, 2013). A growing number of studies have examined the role of grandparenting in shaping older adults' well-being in the Asian context (Mehta & Thang, 2012). Those studies have often focused on grandparenting in multigenerational households – an extended family setting, which is a more traditional and common family structure in Asia than in western countries. For instance, Taiwanese older adults experience fewer depressive symptoms when providing long-term grandparenting in a multigenerational household, relative to non-caregiving and short-term caregiving grandparents (Ku et al., 2013). In addition, numerous Chinese grandparents in rural areas are taking care of grandchildren as the primary caregiver to support their adult children, who are working in urban areas. Those rural grandparents providing skipped-generation household grandparenting have fewer depressive symptoms when migrant adult children provide financial support in return (Cong & Silverstein, 2008). The mixed evidence suggests that sociocultural differences in the grandparenting experience and its health consequences exist even in the same regional context.

Korean Grandmothers and Mental Health

Although there is some research on grandparenting in Asia, these studies have often focused on multigenerational household grandparenting, which is a relatively rare family structure in Korea (Korea Institute for Health and Social Affairs, 2014). Moreover, the mixed findings from the Asian context indicate that country-specific studies are necessary for a more comprehensive understanding of the effects of grandparenting on mental health.

More and more grandparents in Korea have taken care of their grandchildren over the past decades. Korean grandparenting is unique because a sizable number of older adults offer intensive child care (e.g., full-time) for their grandchildren despite not living in the same household with grandchildren and/or adult children (Korea Institute of Child Care and Education, 2015). Despite the growing trend, Korean older adults' grandparenting and its health implications remain underexplored (Choi & Zhang, 2018). Only a few studies have examined the association between grandparenting and mental health in the Korean context. Some studies have found that caring for grandchildren has a protective effect on mental health in later life. Grandparents who provide part-time grandparenting (i.e., less than 40 hours of care per week) are more likely to experience higher life satisfaction than full-time caregiving grandparents (Choi & Cha, 2013).

Most prior literature, however, has reported the harmful impacts of grandparenting on older adults' mental health, specifically depressive symptoms. As found in the United States and Europe, certain family structures and intensive care are factors that increase depressive symptoms in Korea. Older adults providing

skipped-generation household grandparenting are prone to experience a higher level of depressive symptoms (Bae, 2007). Providing full-time caregiving is connected to more severe depressive symptoms among grandparents compared to those who are part-time caregivers (Bae, 2007; Baek, 2009).

It is important to point out that previous findings do not fully represent the experience of Korean grandparents. The majority of studies have focused only on excessive caregiving demand, such as skipped-generation household grandparenting and full-time grandparenting (M.-H. Kim & Kim, 2004; Lee & Han, 2008). However, those types of grandparenting are not common among older adults. It is still unclear whether and how other types of grandparenting affect mental health. In addition, researchers do not utilize both family structure and care intensity to measure grandparenting; most studies consider only one of the two concepts (Baek, 2009; Y. Choi & Cha, 2013). It is also unknown how other characteristics of older adults, such as socioeconomic status (SES), health behaviors, and social support, influence the linkage between grandparenting and mental health. Finally, most prior research has used either qualitative methods (E.-J. Kim & Seo, 2007) or cross-sectional or regional data (Bae, 2007; Baek, 2009; Y. Choi & Cha, 2013; Kang, 2011). Thus, the results cannot be generalized to older adults in Korea and it is also impossible to draw causal inference about the health consequences of grandparenting.

Present Study

The current study aims to examine the association between grandparenting and mental health, specifically the trajectory of depressive symptoms of caregiving grandmothers in Korea. Guided by the role enhancement and role strain theories and previous literature, we hypothesize that grandmothers who provide full-time non-coresident grandparenting have more depressive symptoms than their non-caregiving counterparts, whereas grandmothers who provide part-time non-coresident grandparenting have fewer depressive symptoms. We also hypothesize that grandmothers who take care of their grandchildren in multigenerational households have fewer depressive symptoms than non-caregiving grandmothers because a few studies in Asian countries found that multigenerational household grandparenting can be beneficial for older adults' mental health (Ku et al., 2013).

This study goes beyond previous studies in several ways. First, we incorporate both family structure and care intensity for a more thorough measurement of grandparenting. This approach captures various types of contemporary Korean grandparenting. Second, this study uses a nationally representative longitudinal survey to better understand the association between grandparenting and mental health over time. Third, we control for multiple confounders that may influence both entry into grandparenting and depressive symptoms.

DATA AND METHODS

Data

We use the Korean Longitudinal Study of Aging (KLoSA) to examine the relationships between grandparenting and depressive symptoms among grandmothers.

The KLoSA is a longitudinal study of a nationally representative sample of 10,254 Koreans aged 45 and older in 15 major cities and provinces. The primary purpose of the survey is to collect data on older adults' labor force participation, family life, financial status, retirement, health status, and social welfare, and it has been biennially conducted since 2006, the first survey year.

This study uses Waves 2, 3, and 4 (2008, 2010, and 2012) of the KLoSA. We exclude Wave 1 (2006) because the baseline wave does not contain sufficient information on the respondents' household members, which is important for measuring grandmothers' family structure and the relevant grandparenting type. Of the 8,688 respondents in 2008, 5,682 respondents are grandparents who have at least one grandchild. Our sample is limited to 3,457 grandmothers; grandfathers ($n = 2,225$) are dropped from the sample due to the low number of grandfathers who provide care to their grandchildren. We also exclude respondents who are older than 80 ($n = 385$) since the oldest older adults are less likely to provide child care due to their health decline (Hughes et al., 2007; Ku et al., 2013). The range of missing data in the sample varies from less than 1% for most variables to 6.2% for household assets, and listwise deletion is used to handle the missing data. The final analytic sample includes 2,814 grandmothers, contributing to 7,657 observations across three survey waves with an average of 2.7 observations per respondent.

Measures

Depressive symptoms. Depressive symptoms are measured using the Center for Epidemiologic Studies-Depression (CES-D) scale, which ranges from 1 to 10. The depressive symptoms are constructed as a time-varying variable across the three waves.

Grandparenting. Grandparenting is measured as a time-varying categorical variable using two characteristics of grandmothers: family structure and care intensity. First, we classify grandmothers into caregiving and non-caregiving groups based on the question of whether they provided child care ("Did you take care of any of your grandchildren under the age of 10 last year?"). We then utilize (a) household member information and (b) the hours of child care for grandchildren per week ("On average how many hours per week did you spend on caring for (grandchild's name) last year?") to capture caregiving grandmothers' family structure and care intensity, respectively. The categories of grandparenting include no grandparenting (=reference), multigenerational household grandparenting, part-time non-coresident grandparenting, and full-time non-coresident grandparenting. Grandmothers who are in an extended family setting (i.e., living with both adult children and grandchildren) and provide care for the grandchildren are "multigenerational household grandparenting." Caregiving grandmothers who head their own household (i.e., not living with either adult children or grandchildren) are "non-coresident grandparenting." Among the non-coresident caregiving grandmothers, we categorize those who take care of grandchildren less than 40 hours per week as "part-time" and those who provide grandparenting for 40 and more hours per week as "full-time." This classification reflects the trend of highly intensive grandparenting among Korean older

adults, who report approximately eight hours of daily child care per week ([Korea Institute of Child Care and Education, 2015](#)). Custodial grandmothers who live with grandchildren only (i.e., skipped-generation household grandparenting) are excluded because of small sample size (0.4%). We do not subcategorize the multigenerational household grandparenting group based on care intensity due to insufficient numbers of respondents for each subgroup.

SES. SES comprises four predictors. Education is a categorical variable coded using grandmothers' highest education level at baseline: elementary school or less (=reference), middle school, and high school diploma or more. Household income is a time-varying continuous variable, and we take the natural logarithm of its values to reduce the skewness. Household asset, which is standardized and time-varying, is measured using the total amount of assets owned by all household members. Employment is measured as time-varying and dichotomous (1 = currently working).

Health behaviors. We include three sets of time-varying dummy indicators: currently exercising (1 = yes), currently smoking (1 = yes), and currently drinking (1 = yes).

Social support. Social support is assessed with three time-varying dummy variables. Social activity is measured based on how often respondents actively participate in any organizations, clubs, or societies (1 = more than monthly). We also include financial or non-financial support from adult children (1 = yes) and financial or non-financial support to adult children (1 = yes).

Controls. Age is a continuous variable and centered at 47. A preliminary analysis shows no evidence that the age effect has a non-linear pattern. Marital status is coded as a time-varying dummy variable (1 = married). Past grandparenting experience is measured in 2008 as a dummy variable (1 = yes). Self-rated health (1 = fair or poor health) and whether respondents were ever diagnosed with any major chronic diseases (e.g., cardiovascular disease, heart disease, diabetes, cancer, high blood pressure) by a physician (1 = yes) are time-varying dummy covariates to reduce potential bias from confounders. Two measures of attrition, respondents' death and dropout at any point across the three waves (1 = yes), are included in all models.

Analytic Strategy

We first present weighted descriptive statistics of the sample in this study. We then employ growth curve models to examine how grandparenting affects the trajectory of depressive symptoms. The growth curve model distinguishes two different types of variance (i.e., within-individual level and between-individual level) in estimating population average differences in initial status and rate of change. Taking advantage of three waves of the KLoSA and the growth curve analysis, we estimate the development of depressive symptoms as a function of age. The basic growth curve models take the following forms:

$$\text{Level 1 model: } Y_{ij} = \pi_{0i} + \pi_{1i}\text{Age}_{ij} + \pi_{2i}G_{ij} + \pi_{3i}G_{ij}\text{Age}_{ij} + \varepsilon_{ij}$$

$$\text{Level 2 model: } \pi_{0i} = \mathbf{X}_0' \mathbf{B}_0 + \zeta_{0i}$$

$$\pi_{1i} = b + \zeta_{1i}$$

$$\pi_{2i} = c$$

$$\pi_{3i} = d$$

In the level 1 model for within-individual change of depressive symptoms over time, individual's growth trajectory of depressive symptoms is a function of time, which is age. Y_{ij} denotes the dependent variable, the depressive symptoms of individual i at the j th wave, and $j = 1, 2,$ or 3 indicating KLoSA waves 2 (2008) through 4 (2012); Age_{ij} is the age of individual i at the j th wave. G_{ij} represents the grandparenting of individual i at the j th wave; π_{2i} denotes the coefficient for the effects of grandparenting for individual i at the j th wave. π_{3i} is the coefficient of the interaction term between grandparenting and age; π_{0i} and π_{1i} are the i th individual's intercept and age slope; ε_{ij} is the level 1 residual. The level 2 model specifies heterogeneity in change across individuals. \mathbf{X}_0' represents all time-invariant covariates. ζ_{0i} and ζ_{1i} are individual-specific residual terms. All other time-varying covariates are entered at level 1.

The analyses estimate five models. The base model (Model 1) included grandparenting and basic controls (i.e., marital status, past grandparenting experience, self-rated health, chronic condition, death, and dropout). Then, SES, health behaviors, and social support were added in a series of nested models (Models 2–4). The full model included all covariates.

RESULTS

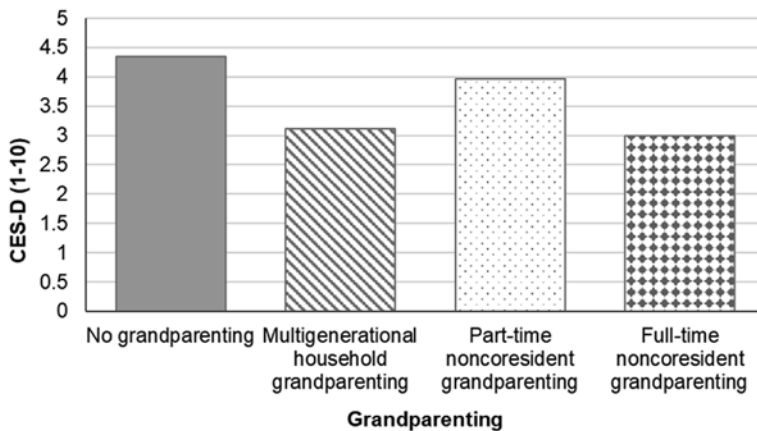
Sample Characteristics

Table 1 presents weighted descriptive statistics for Korean grandmothers at baseline (2008). The average CES-D score for all grandmothers is 4.27 out of 10. The average age of grandmothers was 65.09 years old. Most grandmothers are not taking care of grandchildren (93.10%). Among caregiving grandmothers, full-time non-coresident grandparenting is the largest group accounting for 3% of all grandmothers. Grandmothers who provide part-time non-coresident grandparenting and multigenerational household grandparenting account for 2.37% and 1.53%, respectively. **Fig. 1** shows the average CES-D scores by grandparenting type. Non-caregiving grandmothers have the highest level of depressive symptoms, followed by grandmothers who provide part-time non-coresident grandparenting and multigenerational household grandparenting. Those who provide full-time non-coresident grandparenting report the lowest level of depressive symptoms.

In terms of SES, the majority of grandmothers report elementary school or less (69.52%). The average household income and household assets are 1,887.60

Table 1. Weighted Descriptive Statistics for Grandmothers Aged 47–80, KLoSA, 2008 ($N = 2,814$).

Variable	Mean	SD
CES-D (1–10)	4.27	2.96
Age	65.09	8.05
Grandparenting (%)		
No grandparenting (ref.)	93.10	
Multigenerational household grandparenting	1.53	
Non-coresident grandparenting: part-time	2.37	
Non-coresident grandparenting: full-time	3.00	
Socioeconomic status		
Elementary school or less (ref.) (%)	69.52	
Middle school (%)	15.77	
High school diploma or more (%)	14.71	
Household income (10,000 Won)	1,887.60	2,584.85
Household asset (10,000 Won)	18,004.87	29,929.17
Working (%)	27.67	
Health behaviors (%)		
Exercise	32.28	
Smoking	3.35	
Drinking	17.47	
Social support (%)		
Social activity (more than monthly = 1)	88.02	
Support from adult children (yes = 1)	83.30	
Support to adult children (yes = 1)	26.31	
Controls (%)		
Married	67.95	
Past grandparenting experience	13.34	
Poor self-rated health	38.70	
Chronic condition	65.41	
Death	4.01	
Dropout	10.42	

**Fig. 1.** Depressive Symptoms by Grandparenting. *Source:* KLoSA (2008).

(10,000 Won) and 18,004.87, respectively. More than 27% of grandmothers are currently working. With respect to health behaviors, more than 30% of grandmothers report regular exercise. Only 3.35% are smokers and approximately 17% are drinkers. As for social support, most grandmothers engage in frequent social activities (88.02%) and receive some financial or non-financial support from their adult children (83.30%). Approximately 26% of grandmothers provide some financial or non-financial support to adult children. Two-thirds of grandmothers (67.95%) are married and 13.34% of grandmothers have grandparenting experience in the past. 38.70% of grandmothers rate their health as poor and slightly more than 65% of them have been diagnosed with at least one major chronic disease.

Grandparenting and Depressive Symptoms Trajectories

Table 2 reports growth curve estimates of depressive symptoms by grandparenting between ages 47 and 80. Results from Model 1 show that for grandmothers who provide multigenerational household grandparenting, they have a higher mean level of depressive symptoms (1.615, $p < 0.1$) than their non-caregiving counterparts at age 47, controlling for marital status, past grandparenting experience, poor self-rated health, chronic condition, and attrition. However, the negative coefficient for multigenerational household grandparenting on the age slope (-0.098 , $p < 0.05$) suggests that they have a slower rate of increase in depressive symptoms compared to those who did not provide grandparenting.

Fig. 2 illustrates the association between grandparenting and the trajectories of depressive symptoms among non-caregiving grandmothers and grandmothers who provide multigenerational household grandparenting based on estimates from Model 1, using the reference group for all dummy controls. Overall, grandmothers providing multigenerational household grandparenting exhibit more depressive symptoms at age 47 than non-caregiving grandmothers, but experience a decline in depressive symptoms with age. In contrast, non-caregiving grandmothers experience an increase in depressive symptoms with age. The trajectories of depressive symptoms between the two groups converge when they are in their mid-60s and then diverge afterward.

Next, we added SES, health behaviors, and social support to Model 1, respectively. After adding SES (Model 2), the estimated differential in the rate of change in depressive symptoms between grandmothers who provide multigenerational household grandparenting and non-caregiving grandmothers is reduced from -0.098 to -0.095 but remains statistically significant. Results from Model 3 to Model 4 suggest that after adding health behaviors and social support respectively, the estimated differentials in the rate of change in depressive symptoms between multigenerational household grandparenting and non-caregiving grandmothers are slightly reduced but remain statistically significant in both models ($p < 0.05$).

The full model (Model 5) shows that, after controlling for all covariates, multigenerational household grandparenting is still associated with a higher level of depressive symptoms at age 47, relative to their non-caregiving counterparts (1.420, $p < 0.1$). Surprisingly, results from Model 1 to Model 5 show that there

Table 2. Growth Curve Estimates of Grandparenting on Trajectories of Depressive Symptoms among Grandmothers, KLoSA, 2008–2012 ($N = 2,814$).

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Fixed effects					
Intercept	3.119***	4.641***	3.421***	3.986***	5.716***
Grandparenting (ref. = no grandparenting)					
Multigenerational household grandparenting	1.615 ⁺	1.599 ⁺	1.557 ⁺	1.470 ⁺	1.420 ⁺
Part-time non-coresident grandparenting	-0.726	-0.793	-0.676	-0.584	-0.611
Full-time non-coresident grandparenting	0.056	-0.004	0.015	-0.040	-0.127
Linear slope (age)					
Multigenerational household grandparenting	-0.098*	-0.095*	-0.096*	-0.095*	-0.090*
Part-time non-coresident grandparenting	0.035	0.039	0.032	0.027	0.029
Full-time non-coresident grandparenting	-0.024	-0.025	-0.023	-0.016	-0.017
Socioeconomic status					
Middle school		-0.382**			-0.298*
High school diploma or more		-0.574***			-0.432***
Working		-0.374***			-0.329***
Household income		-0.139***			-0.148***
Household asset		-0.034			-0.039
Health behaviors					
Exercise			-0.446***		-0.399***
Smoking			0.763**		0.649**
Drinking			-0.386***		-0.291**
Social support					
Social activity				-1.012***	-0.999***
Support from adult children				0.314***	0.286**
Support to adult children				-0.357***	-0.281***
Controls					
Married	-0.421***	-0.336***	-0.424***	-0.403***	-0.326***
Past grandparenting experience	-0.326*	-0.332*	-0.285*	-0.398**	-0.361**
Poor self-rated health	1.433***	1.356***	1.390***	1.392***	1.281***
Chronic condition	0.257**	0.231**	0.285**	0.254**	0.257**
Death	0.984***	0.892***	0.892***	0.907***	0.753**
Dropout	0.438**	0.437**	0.441**	0.398*	0.408**
Random effects					
Level 1 residual	4.554***	4.539***	4.540***	4.558***	4.530***
Level 2 intercept	2.861***	2.704***	2.806***	2.615***	2.465***
Level 2 slope	0.001***	0.001***	0.001***	0.001***	0.001***
-2 Log-likelihood	18,166	18,131	18,136	18,095	18,039
AIC	36,366	36,305	36,312	36,229	36,133
BIC	36,484	36,458	36,450	36,368	36,327

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, ⁺ $p < 0.1$.

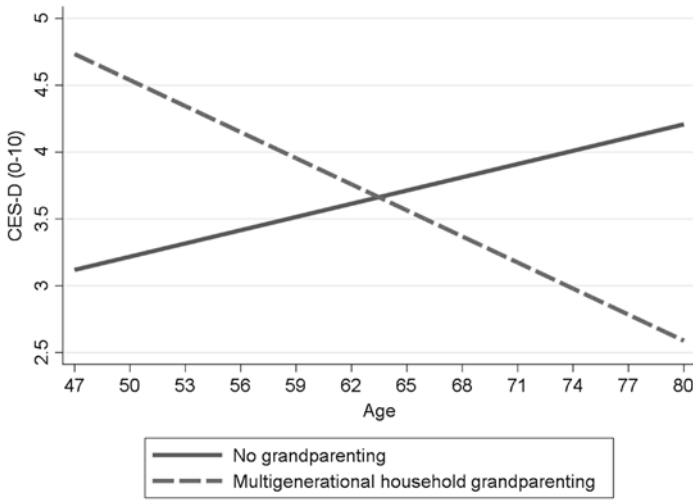


Fig. 2. Trajectories of Depressive Symptoms by Grandparenting: Growth Curve Model Estimates. Note: Fig. 2 is based on estimates from Model 1 in Table 2.

is no significant difference between grandmothers who provide non-coresident grandparenting (i.e., full-time or part-time grandparenting) and non-caregiving grandmothers in terms of the trajectories of depressive symptoms. Finally, both the Akaike information criterion (AIC) and Bayesian information criterion (BIC), the goodness-of-fit statistics, suggest that the final model fits the data best.

Other covariates are statistically significant in the expected directions. Being married, providing grandparenting in the past, being highly educated, currently working, having a higher household income, currently exercising and drinking, actively participating in social activities, and providing financial or non-financial support to adult children are associated with fewer depressive symptoms of grandmothers. In contrast, being in poorer health, having chronic conditions, currently smoking, and receiving financial or non-financial support from adult children are significantly associated with more depressive symptoms. Those who died or dropped out also have more depressive symptoms.

DISCUSSION

Studies on how grandparenting affects mental health in later life are limited, and the findings are inconsistent. Moreover, the majority of these studies have been conducted in the United States and Europe, although the trend of grandparenting is growing in other sociocultural contexts including Asia (Mehta & Thang, 2012). Using a nationally representative sample from Korea, this study extends the extant literature by investigating whether grandparenting affects the trajectory of depressive symptoms among older women.

Results from this study reveal that a particular type of grandparenting shapes depressive symptom trajectories in later life. Specifically, multigenerational household grandparenting significantly decreases caregiving grandmothers' depressive symptoms as they age, although those grandmothers have a higher initial level of depressive symptoms than that of non-caregiving counterparts ($p < 0.1$). In contrast, non-caregiving grandmothers' depressive symptoms increase between ages of 47 and 80. The mental health gap between grandmothers who provide multigenerational household grandparenting and non-caregiving grandmothers decreases with age and even diverges when they reach their mid-60s, suggesting that grandmothers who provide multigenerational household grandparenting enjoy better mental health after mid-60s, controlling for multiple covariates. The results are robust after we controlled for SES, health behavior, and social support.

These findings contribute to the literature on Korean grandparenthood because previous studies have overlooked multigenerational household grandparenting type given its low prevalence (Kim & Kim, 2004; Lee & Han, 2008). Our findings are in line with prior studies that report fewer depressive symptoms among older adults providing multigenerational household grandparenting in Taiwan and China (Cong & Silverstein, 2008; Ku et al., 2013). However, the results are inconsistent with the studies in the United States, which find no relationship between multigenerational household grandparenting and depressive symptoms (Hughes et al., 2007; Musil, Jeanblanc, Burant, Zauszniewski, & Warner, 2013).

Our findings suggest that grandmothers who provide multigenerational household grandparenting may psychologically benefit from stable intergenerational relationships and grandchild care in Korea. The coresident setting with both adult children and grandchildren allows grandmothers to have frequent interaction with family members and receive physical and psychological support. Supported by the role enhancement theory, those grandmothers may have more self-efficacy, sense of achievement, and life satisfaction derived from the additional caregiving role (Chen, Mair, Bao, & Yang, 2014; Choi & Zhang, 2018). Moreover, grandmothers who provide multigenerational household grandparenting may experience less stress and fewer responsibilities because they are not custodial grandparents with primary care obligations. The traditional Confucian values in Korea, which emphasize the concepts of filial piety in an extended family (Yee, Su, Kim, & Yancura, 2009), may also contribute to the better mental health of grandmothers because they live in the family structure that the older generation often favors.

Based on the role strain theory and prior studies, we expected that grandmothers who provide full-time non-coresident grandparenting may experience more depressive symptoms than non-caregiving grandmothers due to the strains of intensive caregiving. However, this hypothesis was not supported. We do not find any significant difference between grandmothers who provide full-time non-coresident grandparenting and non-caregiving grandmothers. The results differ from the findings of a cross-sectional study that full-time grandchild care is adversely associated with depressive symptoms among Korean older adults (Bae, 2007; Baek, 2009). We also did not find any significant difference between grandmothers who provide part-time non-coresident grandparenting and non-caregiving

grandmothers. These results suggest that the strains of non-coresident grandparenting may be canceled out by its benefits.

This study is not without limitations. First, due to the small sample size of caregiving grandparents in the data, we were unable to include some types of grandparenting (e.g., skipped-generation household grandparenting). As such, the small sample size may prevent us from detecting significant effects of particular types of grandparenting on depressive symptoms. Second, it is still plausible that healthier grandparents are more likely to take care of grandchildren, although we have controlled for health conditions and health behaviors to reduce the selection bias. Lastly, future research needs to explore the gendered implications of grandparenting for mental health. Although this study excludes grandfathers due to their small sample size, an increasing number of grandfathers are engaged in grandchild care. Given a traditional gender norm which regards child care more as a women's role (De Vos & Lee, 1993; Kamo, 1998), the meaning of grandparenting and its impacts on health may be different for grandfathers.

Despite these limitations, the current study contributes to the literature on grandparenting and mental health in later life. Using longitudinal data on a nationally representative sample in Korea, we find that grandmothers' depressive symptoms decline with age when providing multigenerational household grandparenting. In comparison, non-caregiving grandmothers experience an increase in depressive symptoms with age. This study calls for future research that explores the social/cultural differences in grandparenthood and well-being.

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